Brythonic second lenition revisited

Brythonic "Second Lenition" Revisited: Theoretical and typological considerations on the rise of Brythonic voiceless spirants

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Abstract

I consider some of the theories that have been proposed to account for the development of Proto-Celtic unvoiced stops in Brythonic. I show that the analysis involving "direct" spirantisation of doubled consonants, with no degemination, such as the one proposed in (Isaac, 2004), does not only make some wrong predictions but also rests on assumptions that appear untenable within the findings of modern phonological theory. I review the arguments put forward by, for example, Thomas (1990), and show how they must be amended to fully account for all of the problematic data.

1 The background

PC unvoiced in stops in Brythonic: /p t k/ → /b d g/ intervocalically, /f θ x/ after liquids and in gemination (cf. *calch* 'chalk' ← L *calcem*, *cath* 'cat', L *cattus*).

Mutations going back to sandhi

Welsh has nasal mutation after *fy*, PB **men* 'my' but not after *eu*, PB **esōn* 'their'; only voiced stops undergo nasal mutation after numerals such as *naw*, PB **nawan* 'nine'; spirant mutation after *ei*, PB **esyas* 'her', *a*(*c*), PB **ak* 'and', *chwe*, PB *sweks* 'six', *tri*, PB **trīs*.

Breton and Cornish have no systematic counterpart to nasal mutation; almost all of the above items, including *o* 'their', show evidence of having at least at some point triggered the counterpart to W spirant mutation.

1.1 The two theories

- (Jackson, 1953; Martinet, 1955; Isaac, 2004) suggest that spirants evolved out of *fortes* geminates due to a "sharpening of expiratory force" (Jackson, 1960) or the prolongation of the continuant articulation present in aspirated consonants and the resulting loss of constriction (Isaac, 2004). Post-liquid *fortes* stops are geminated (Jackson, 1953).
- (Thomas, 1990; McCone, 1996) suggest that the geminates must have undergone intervocalic simplification to singletons, and then joined by the formerly unlenited post-liquid stops in a process of "second Brythonic lention". This theory allows doing away with two different kinds of geminates, and in fact eliminates the *fortes* vs. *lenes* distinction in PB phonology.

2 The "geminate theory"

The principal points of (Isaac, 2004) are summarised below

- PB, like Modern Welsh, had an opposition of voiceless aspirated vs. unvoiced aspirated stops rather than voiceless vs. voiced; cf. also Koch (1990).

☞ Isaac mostly gives indirect evidence, and most of it from Modern Welsh.

☞ For the "first" lenition of voiceless stops to operate, [voice] must still be the distinctive feature: intervocalic leniton of [t^h] to [t] appears unlikely, because, if anything, the former is *more* open; it does not appear to be documented in the careful surveys in (Kirchner, 1998; LaVoie, 2001; Gurevich, 2004).

☞ Welsh is very close to a large area of North-Western Europe where such a shift is very common (Helgason, 2005), but not necessarily contact-induced, as is often assumed for Scottish Gaelic; moreover, even Scandinavian languages, for all their uniformity in this respect, may have totally lost [voice] as late as the 13^{th} century (e. g. Danish)

- Medial "unvoiced" stops go back to unaspirated geminates, spirants descend from aspirated geminates

☞ "Aspirated geminates" do not seem to be well attested (Kehrein, 2002)

☞ Isaac's account of the rise of the spirants is untenable. His "retraction of articulation" mechanism looks like a non-syncronisation of oral and laryngeal gestures like the one described by Blevins (2005) as leading to the shift of (unaspirated) geminates to aspirated singletons. Isaac suggests that in the case of [tt$^{\text{h}}$] the "opening" is already prior to voice onset, and thus it "opens onto the dental articulation"; but how the *laryngeal* opening should interact with *oral* constriction is left unexplained.

☞ Cross-linguistically, geminates are known to be subject to *geminate inalterability* (Kirchner, 2000), that is, non-susceptibility to lenition processes without prior degemination.

☞ Geminates are among the segments which require the most articulatory effort, whereas non-strident fricatives, *contra* (Griffen, 1985), occupy the lower end of the spectrum; such an abrupt transition seems unwarranted. Moreover, in Irish the non-strident fricatives are the outcome of *lenition*

☞ If [tt$^{\text{h}}$] went through a phase like [t$^{\theta}$], it is difficult to see how it could be kept distinct from [t], which tends to have a non-strident release anyway.

☞ Isaac (2004) does not touch upon the evolution of post-liquid stops, quietly endorsing the gemination-after-liquids scenario; it is however unlikely both phonetically and typologically; if anything, R_V is a common context for lenition, nor fortition (even in Celtic itself).

3 A possible solution

3.1 "At the boundary"

All accounts of the above phenomena, either explicitly or covertly acknowledge that the processes at the left edges of words were entirely parallel to word-internal ones. Indeed Isaac builds his criticism of Thomas (1990) on CR-initial words, assuming that the sequence *n#tr* would develop to [θr] just like it did word-internally.

☞ If this is so, Isaac's model also makes wrong predictions.

- ☞ PB final *k* cannot simply assimilate to following stops, it must remain as an offglide in a diphthong, cf. PB */ak tigos/ → **ai thŷ* 'and a house', cf. L *factum* → W *ffaith* 'fact';
- ☞ The assimilation of final *k* to "voiced" (unaspirated) stops must cause "provection": Pre-PB **ak donjo-* →PB **ak tonjo* →*a ttin* →*a t^{h}in*, W ***a tyn* instead of *a dyn* 'and a man'
- ☞ If the boundary between the proclitic and the word is not different from word-internal contexts, we would expect all Brythonic languages to have Goidelic-style eclipsis of vowel-initial words, like W **eu nafal*, B **o naval*, cf. Ir *a n-úll* 'their apple'.

The phonological organization of the utterance.

Mora μ →Syllable σ →Phonological Word ω →Phonological Phrase ϕ →Intonational Phrase ι

Some of the constituents are *recursive* (Anderson, 2005): this is especially true of the phonological phrase and the phonological word.

Phonological word ≠ "Phonetic word"!

Clitics are words that cannot bear lexical stress and hence form pwords (Anderson, 2005). This can be because of lexical specification or because the word does not have enough segmental material to form a phonological word.

3.2 The proposal

The idea is that certain types of processes are *blocked* if the boundary of the (top-level) phonological word intervenes.

In particular, at the time when the assimilation of voiced stops to preceding nasals began operating, words like **min* and **eson* still bore lexical stress and could be considered phonological words:

*[windos]$_\omega$ 'white' W *gwyn*, B *gwenn*

*[min [bardos]$_\omega$]$_\phi$ 'my poet'

*[kantlon]$_\omega$ 'song' W *cathl*

*[min [tlusso]$_\omega$]$_\phi$ 'my village'

On the other hand, Brythonic "fist lenition" operated within phonological phrases

*[brigantinos maros]$_\phi$ 'a great king' W *brenin mawr*

*[brigantinā mārā]$_\phi$ W *brenhines fawr*

Problem: what do we do with nasal-final numerals? I suggest they are best analyzed as first elements of compounds (Schrijver, 1999), *pace* Isaac (2004). This is confirmed by the existence of compounds such as *trywyr* 'three men'. Also modern preposed adjectives most likely originate in such compounds as well, but they cannot be regarded as bound elements in the modern language (Morgan, 1952).

*[[nawan]$_\omega$ [dinjo]$_\omega$]$_\omega$ 'nine men' W *naw nyn* 'nine men'

The divergence between Welsh vs. Cornish and Breton is in the absence of nasal mutation in the latter. I suggest this is connected with the chronology of cliticisation relative to the loss of final consonants. Elements like W *fy*, *eu* are clearly clitics, and apparently they were becoming such faster than the corresponding CB ones. This means that at least **min* (but not **eson*) were incorporated into (recursive) pwords before the loss of (pword-)final nasals.

*[min [broɣos]$_\omega$]$_\omega$ 'my land' W *fy mro*

*[[min]$_\omega$ [broɣos]$_\omega$]$_\omega$ B *va bro*

PB **eso(n)* was not incorporated at that point in Welsh because, unlike **min*, it was bimoraic and could retain lexical stress. That **min* was monomoraic follows from the final consonant extrametricality needed to derive PB penultimate stress.

After the loss of final consonants in pwords (including embedded ones), there arose a lot of vowel-final triggers. This led to a great number of unvoiced stops inside pwords exposed to preceding newly final vowels, which is the reason for the predominance of the spirant mutation in CB where Welsh has none or nasal, e. g. *va zad* 'my father', *naou c'hant* 'nine hundred', *o zad* 'their father'.

The Welsh situation was more complex. Voiceless spirantisation operated inside pwords only—but was blocked by the configuration]$_\omega$[$_\omega$. This incidentally explains the lack of spirant mutation after masculine singular nouns, rather naïvely written off by Isaac (2004) as "redundant".

No nasal-final trigger causes spirant mutation in Welsh. This means that voiceless spirantization predates final nasal loss, while the reverse obtains in Breton, as noted by Thomas (1990). This is really the only difference in rule ordering. The problems that Isaac noted with CR-initial words and numerals have evaporated.

☞ Exceptions to the above rules are the word *tri* and, if we accept the reconstruction in (Koch, 1987), the OW preverbs[1]. What they have in common is the pattern "stressed monosyllable + pword boundaries".

The scope of voiceless spirantisation in Breton was variable; hence the unstable spirant mutation after the masculine singular article; else we are dealing with the unstable status of **sindos*—still a pword in W, a clitic in CB.

4 Brythonic and Evolutionary Phonology

The model of phonological change proposed by (Isaac, 2004), which is based on the hearer's perception and interpretation of the speaker's intention reminds one very closely of Evolutionary Phonology's (Blevins, 2005) CHOICE mechanism. In particular, Isaac's account of why post-syncope secondary "voiced" geminates turn out as 'voiceless singletons" appears to be essentially correct (and provides a *terminus ante quem* for the introduction of [aspirated] into Welsh phonology).

Evolutionary phonology also explains why words like *fy* trigger nasal mutation of voiced stops if the primary nasal assimilation did not work in these cases. If we take a later variety of Brythonic, the hearer very seldom meets *-nd*-type clusters inside pwords (in fact, they have assimilated everywhere except the mutation cases), (s)he assumes that exemplar like **fyn dyn* is a surface representation of the expected *fyn nyn*, and uses this underlying form in his/her own speech, giving rise to the familiar pattern.

[1] Incidentally, our proposal allows to do away with unneeded post-stress gemination in this reconstruction.

5 Conclusion

- ☞ The model of Brythonic historical phonology like the one espoused in (Thomas, 1990) is essentially correct because it maked no recourse to highly dubious assumptions aboutwhat is possible phonetics and phonology
- ☞ Most of the difficulties with this model pointed out by Isaac (2004) are not intractable provided we keep in mind the prosodic constituency, the existence of which is proven from *independent* premises.
- ☞ The CCC model of (Blevins, 2005) of linguistic change adequately describes many of the phenomena under consideration.

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